

**DEFENSE ADVANCED RESEARCH PROJECTS AGENCY
ADVANCED TECHNOLOGY OFFICE (ATO)
PLANNED PROCUREMENTS
December 2001**

PROGRAM DESCRIPTION	FUNDING	SCHEDULE	PROGRAM MGR
Advanced Speech Encoding: The goal of this program is to compress speech to bit rates between 200 bps and 800 bps, while producing speech quality at least as good as that produced by the current standard, and maintaining that quality (and bit rate) in militarily relevant noisy environments. The program will provide means for reliable authentication of the speaker's identity. This will be accomplished by directly measuring the glottal excitation function, which, when combined with the information contained in the acoustic data, allows direct computation of the physical vocal tract transfer function, which will at a minimum allow vocoding at lower update rates and with fewer needed parameters. Furthermore, since the physical vocal tract transfer function is directly associated with the formation of phonemes, it is possible to in fact recognize the phonemic information in the speech and transmit that, thus allowing further data rate reductions. Finally, direct measurement of the vocal excitation waveform potentially provides a unique physiological set of metrics that can be used for speaker authentication.	\$25M	BAA 1QFY02 Total program: 4 years	Dr. Penrose C. Albright ATO
Dynamic Coalitions: Existing technologies do not allow quick reaction support of secure collaboration within dynamically established mission-specific coalitions. Current COTS products fall short in providing the necessary technologies for the creation of secure coalitions of the order of 10-100 participants. In addition, the infrastructure services necessary to support such coalitions are non-existent. With the ever-increasing network-centric view of the future, these types of technologies will be critical for providing continued coalition operation while minimizing potential threats from increased attack. The objective of the Dynamic Coalitions program is the creation of technologies for establishing distributed (vice hierarchical) coalition security policies for essential operations. This includes securing the underlying group communication technologies and providing the necessary coalition infrastructure services, such as authentication and authorization, which must be present for secure collaboration in a coalition environment.	\$5M	BAA 2QFY02 Total program: 5 years	Dr. Doug Maughan ATO
LOKI: LOKI is envisioned to be a multi-phase program to develop and demonstrate an underwater fighter-like vehicle with asymmetric capabilities (small, low-cost, high-speed, transportable) to conduct high priority operations within littoral waters with reduced risk. Phase 0 of the program will be conducted over a two-year period and will develop and demonstrate submersible propulsion system technologies as well as perform other development activities including conceptual designs, utility assessments, concepts of operations, mission analysis, wargaming, etc. Follow-on development of the LOKI vehicle is dependent upon the successes achieved in Phase 0.	\$10M	BAA 2QFY02 Phase 0: 2 years	CAPT John Kamp, ATO

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Next Generation (XG): The DARPA XG program goals are to develop both the enabling technologies and system concepts to provide dramatic improvements in assured military communications in support of a full range of worldwide deployments through the dynamic assignment of allocated spectrum. DARPA's vision is to develop and demonstrate a range of innovative approaches to enabling technologies and system concepts to improve spectral utilization of military radio frequency emitters by a factor of 20. The XG program approach is to develop the theoretical underpinnings for dynamic control of the spectrum, the technologies and subsystems that enable reallocation of the spectrum, and the system appliqué prototypes to demonstrate applicability to legacy and future DoD radio frequency emitters. The approach plans to investigate methods to leverage the technology base in microelectronics with new waveform and medium access and control (MAC) protocol technologies to construct an integrated system. The proposed program goals are to develop, integrate, and evaluate the technology to enable equipment to automatically select spectrum and operating modes to both minimize disruption of existing users, and to ensure operation of U.S. systems. The result of the XG program will be to develop and demonstrate an appliqué for legacy and future emitter systems for joint service utility. The program plans first to issue a solicitation to identify promising technologies, followed by a BAA to develop technologies with a systems application.	\$50M+	PRDA 1QFY02 BAA 4QFY02 Total program: 5 years	Dr. Paul J. Kolodzy ATO
Tera Hertz Operational Reachback (THOR): The primary goal of the THOR program is to emphasize and mature the required technologies and credibly demonstrate a communications system able to provide an optical, high-data-rate (internet-like) backbone to the tactical warfighter whether airborne, on the ground, or under water. The THOR program will enable the Department's vision of a "Global Grid" by creating the high-data-rate nexus among the terrestrial, space, and air grids, as well as enhancing the communications capabilities of the submarine community.	\$90M	BAA 2QFY02 Total program: 4.5 years	Dr. George Duchak ATO